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ABSTRACT

The National Postsecondary Student Aid Study collected data for sample students from registrar and financial aid offices at postsecondary institutions. The data were collected for students enrolled in a postsecondary institution in fall 1986. Since substantial numbers of students are not enrolled in fall and are therefore not represented in the sample, the financial aid awards were weighted to produce estimates for students enrolled any time during the academic year. The methodology used in the production of adjusted estimation weights for a subset of the sample and the results are described in this document, along with several methodological findings. Estimated federal aid recipients enrolled in fall accounted for only about 77% of recipients during the 1986-87 academic year. Fall recipients accounted for only 75% of recipients of Pell Grants and Guaranteed Student Loans (GSLs). Fall recipients were a much higher percentage of recipients for the other three campus-based programs--Supplemental Educational Opportunity Grant, Perkins Loan, and College Work-Study Program. The percent of recipients enrolled in fall varied by institution type. Estimated mean award amounts for fall and academic-year federal aid recipients were more comparable than number of recipients. Individual program data counts were also compared. (MSE)

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Comparison of Fall and Academic Year Student Aid Estimates

1987 National Postsecondary Student Aid Study

Contractor Report

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FOREWORD

The National Postsecondary Student Aid Study (NPSAS) collected data for each sample student from registrar and financial aid office records at postsecondary institutions. This data was collected for students enrolled in a postsecondary institution in fall 1986.

In order to give researchers the flexibility to present the data for the student population for the entire 1986-87 school year, full year weights were developed. This report presents the results and methodology of this activity.

NPSAS data tapes and diskettes are available to those wishing to carry out their analyses. Information about obtaining these data tapes can be obtained from the U.S. Department of Education, Office of Educational Research and Improvement, Technical Services Branch, 555 New Jersey Avenue, Washington, D.C. 20208-5725.

Samuel S. Peng, Director
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EXECUTIVE SUMMARY

In the Fall of 1986 the U.S. Department of Education implemented the first National Postsecondary Student Aid Study (NPSAS). The main purpose of this study was to provide student-based data for examining issues of postsecondary financial aid and student expenses.

A sample of students who were enrolled in the Fall of the 1986-87 school year was selected for the first NPSAS. This sample of students can be used to produce estimates for all postsecondary students who were enrolled during the Fall of 1986.

Other data collection programs may use a different time frame reference to produce estimates of students in postsecondary education. In particular, the number of recipients of federal financial aid traditionally has been reported by the federal aid programs for a full year time period. The reporting of counts for the Pell grant program and the campus-based programs are based on an Academic year period (July 1 to June 30), while counts from the Guaranteed Student Loan program (GSL) are based on a federal fiscal year (October 1 to September 30).

The first implementation of NPSAS was in the 1986-87 academic year. A sample of about 1,100 postsecondary institutions from all sectors was selected, and approximately 60,000 students were sampled from enrollment lists provided by the institutions. The enrollment lists represented students enrolled in the Fall (October) of 1986.

The use of a student sample representing postsecondary students enrolled in the Fall is consistent with other NCES data collection programs and provides a uniform basis for measuring and comparing results. Students enrolled in the Fall represent a majority of the total postsecondary student enrollment for an academic year. However, there are substantial numbers of students, particularly among graduate students, community college students, and students in less than 2-year institutions, who are not enrolled in the Fall and who, therefore, are not represented in the NPSAS sample.

For certain purposes it is desirable to use NPSAS data to produce estimates for students enrolled at any time during an academic year. In order to permit this, adjusted NPSAS estimation weights were produced for a subset of the NPSAS students. The adjusted weights allow analysts to produce 1986-87 academic year estimates for all undergraduate, federally aided students enrolled at any time during the academic year.

This report presents the methodology and the results of the weighting adjustment. Academic year estimates produced with the adjusted weights are compared with the NPSAS Fall estimates and with data from other sources, such as federal financial aid program estimates or reports. This report is a guide to the use of the adjusted weights for producing estimates for undergraduate, federal aid recipients for the 1986-87 academic year.

Methodological Findings

- The estimated number of federal aid recipients who were enrolled in the Fall of 1986 accounted for only about 77 percent of the 1986-87 Academic year recipients. Approximately 1 million of the 4.3 million Academic year recipients of federal aid were not enrolled in the Fall.

- For the Pell and GSL programs, the Fall recipients account for only 75 percent of the Academic year recipients. The Fall recipients are a much higher percent of the Academic year recipients for the other three campus-based programs -- Supplemental

Educational Opportunity Grant (SEOG), Perkins loan, and the College Work Study (CWS) programs.

- The percent of Academic year recipients who were enrolled in the Fall varies by type of institution. A greater percent of the Academic year recipients enrolled in 4-year institutions were also enrolled in the Fall.

- The estimated mean award amounts for Fall and Academic year federal aid recipients are more comparable than the number of recipients.

- The NPSAS Academic year estimates of **Pell grant** recipients closely match the program data counts for most characteristics examined.

- For the estimated number of **SEOG** recipients and their mean award amount, the NPSAS Academic year estimates are marginally closer to the program data than the Fall estimates. The differences between the Fall, Academic year, and program estimates of SEOG are relatively small.

- The program data counts are much greater than both the Academic year and the Fall estimates of **CWS** recipients. The NPSAS estimates of number of recipients and mean award amount are inconsistent with the program data.

- A comparison of **GSL** recipient estimates cannot be made because of the lack of comparable data in the program.

CHAPTER 1: INTRODUCTION

The U.S. Department of Education established the National Postsecondary Student Aid Study (NPSAS) to be a consistent, comprehensive, and efficient student-based data system. The primary purpose of NPSAS is to be able to examine issues of postsecondary financial aid and student expenses using student-level data.

The first implementation of NPSAS was in the 1986-87 school year. A sample of about 1,100 postsecondary institutions from all sectors was selected, and approximately 60,000 students were sampled from enrollment lists provided by the institutions. The enrollment lists represented students enrolled in the Fall (October) of 1986.

The use of a student sample representing postsecondary students enrolled in the Fall is consistent with other NCES data collection programs and provides a uniform basis for measuring and comparing results. Students enrolled in the Fall represent a majority of the total postsecondary student enrollment for an academic year. However, there are substantial numbers of students, particularly among graduate students, community college students, and students in less than 2-year institutions, who are not enrolled in the Fall and who therefore are not represented in the NPSAS sample.

The fact that the NPSAS student sample represents Fall enrollees only is particularly important when comparing NPSAS financial aid estimates to federal financial aid program reports. For example, total numbers of recipients and award amounts reported by the Pell grant program refer to all students enrolled at any time during the academic year (July 1 - June 30). Guaranteed Student Loan (GSL) program reports are based on all loans issued to students during a federal fiscal year (October 1 - September 30).

Because NPSAS estimates refer only to students enrolled in the Fall, they may vary substantially from financial aid program reports covering all students enrolled at any time during a year. For example, the NPSAS estimate of the number of Pell Grant recipients is 2.0 million students, while the Pell Grant program reports 2.7 million students. Part of this difference is caused by differences in the scope of institutions covered (e.g., NPSAS does not include Puerto Rico) and part of the difference is due to different collection methods, sampling error, and other sources of nonsampling error. But most of the difference is attributable to the fact that the Pell program count includes students who were not enrolled in the Fall and are therefore not represented in the NPSAS sample.

For certain types of analysis it is desirable to use the NPSAS data that contain extensive student-level data to produce estimates that are consistent with federal financial aid program reports. In order to permit this, adjusted NPSAS estimation weights were produced for a subset of the NPSAS students. The adjusted weights allow analysts to produce 1986-87 Academic year estimates for all undergraduate, federally aided students enrolled at any time during the academic year.

The adjusted weights were created with a statistical "raking" procedure called iterative proportional fitting (IPF). This procedure uses known characteristics of the total academic year enrollees obtained from federal program offices to adjust the original NPSAS estimation weights. NCES organized a working group to help provide data on known characteristics, and to review results of the adjustment procedures at various stages.

Since the need for academic year estimates was primarily for the analysis of the characteristics of federal financial aid recipients, it was agreed that the adjustment effort would concentrate on providing academic year estimates of postsecondary students who received Federal financial aid, because of the comparison data that was available. This

definition was further refined to be undergraduate postsecondary students who attended a school located in the 50 States or the District of Columbia during the academic year 1986-87 and who received at least one of the following types of aid authorized by Title IV of the Higher Education Act of 1965, as amended: a Pell grant, a Guaranteed Student Loan (GSL), a Supplemental Educational Opportunity Grant (SEOG), a Perkins Loan (formerly NDSL), or College Work Study (CWS). The other Title IV program, State Student Incentive Grant (SSIG), was not included in the process because the federal portion of SSIG is small relative to the other Title IV programs.

The definition of which students were included as undergraduates in this report was made to be as consistent as possible with the classifications from the financial aid programs. For this reason, about 360 students who are classified as graduate students in other NPSAS reports are included as undergraduates in this report. The definition of undergraduate student used for this report was: (1) all students in less than 4-year institutions, (2) all students whose records data or student questionnaire data indicate that they are undergraduate, (3) all students who received a Pell grant or SEOG, or (4) all students who were enrolled on a clock-hour basis. The filtering on this definition of student level reduced the sample size by about 14 percent.

Some of the data items needed for producing the adjusted weights and the tables that appear in this report were missing for some of the students. The methods used for computing the adjusted weights required that all the students could be classified uniquely for reweighting. The imputation of certain items which was done to accomplish this is discussed in Appendix A. The imputation performed on certain data items used in the tables is discussed in Appendix B.

The purpose of this report is to guide users of the adjusted weights in producing 1986-87 Academic year estimates of undergraduate, federal aid recipients. This report is methodological in the sense that findings presented here relate to how reasonable the Academic year estimates are when compared to other estimates. The body of the report describes the results of the activities by comparing the Academic year estimates to the Fall estimates and to data from other sources, such as federal aid program estimates. The details of the activities that were used to produce the Academic year estimates for undergraduate, federal aid recipients are given in Appendix A.

Since the Academic year estimates were created by adjusting the Fall NPSAS weights so that they correspond with preliminary federal financial aid program data counts, comparisons with estimates of the total number of federal aid recipients are not appropriate checks on the validity of the adjustment procedure. Recipient characteristics that were not used as controls in the reweighting procedure, such as mean award amount and family income, are much more suggestive of the validity of the process.

User Notes

Although statistical procedures were employed in producing the results, it must be recognized that assumptions were essential to the process. These assumptions, described in Appendix A, cannot be verified by empirical findings. As a result, anomalies may appear in the application of the results to certain problems. These failures indicate that the adjusted weights are inappropriate for a particular application. *It is strongly urged that the original NPSAS estimation weights, which are not subject to these additional assumptions, be used in analyses wherever possible.*

For some types of estimates the adjusted weights should never be used. For example, estimates of the number of undergraduate, federal aid recipients classified by whether or not they were enrolled for the full year is not an estimate that should be attempted using the adjusted weights. It should always be remembered that the new weights do not change the characteristics of the unweighted student records, rather they simply apply a new weight to the students that were in school in the Fall of 1986. Large biases are possible for certain estimates when the adjusted weights are used. Because of this possibility, *the original NPSAS weights should be used wherever possible.*

The need for Academic year estimates consistent with the federal program time period have also had an impact on the plans for future NPSAS studies. The feasibility of sampling students who enroll at any time during the school year is being examined by NCES for future studies. If this proves feasible, there will be no need to produce adjusted weights in future NPSAS surveys.

CHAPTER 2: ACADEMIC YEAR ESTIMATES ANALYSIS

Five federal programs which provide financial assistance for postsecondary students are the Pell Grant program, the Guaranteed Student Loan program (GSL), the College Work-Study program (CWS), the Supplemental Educational Opportunity Grant program (SEOG), and the Perkins Loan program (formerly NDSL). These five programs are the largest in terms of federal expenditures. The other Title IV federal aid program, which is very small in comparison to the other five programs, is the State Student Incentive Grant (SSIG). The source of funding data on SSIG award amounts from NPSAS is less specific because postsecondary institutions, where the NPSAS data was collected, cannot discriminate the federal component of SSIG from that contributed by the State. For these reasons federal aid recipients are defined for this report to be recipients of any of the five largest federal aid programs. Students who only receive SSIG are excluded from the analysis.

Some of the federal aid programs serve both undergraduate and graduate postsecondary students. For example, approximately 17 percent of Perkins loans and 9 percent of CWS earnings were for graduate students in 1986-87 according to preliminary program data reports. Since graduate students and undergraduate students exhibit different financial aid characteristics, NPSAS Academic year estimates were prepared only for undergraduate postsecondary students. *The findings in this report therefore apply only for undergraduate, postsecondary students who participated in at least one of the following five federal aid programs: Pell, GSL, CWS, SEOG, or Perkins.*

In the sections below, the NPSAS Academic year estimates are compared to the NPSAS Fall estimates, and, where possible, to estimates from other sources, such as the federal aid program data reports. The purpose of these comparisons is to identify results which might indicate that the reweighting process used to create the NPSAS Academic year estimates caused data anomalies that could seriously impair the usefulness of the estimates. Note that there are many Academic year estimates which are clearly infeasible because data collection was conducted only for those enrolled in the Fall of 1986. For example, it is not reasonable to attempt to estimate the number of students who were enrolled only in the Spring term of 1987. These estimates, which are not feasible because of the data collection method, are not included in the following analysis.

NPSAS Academic Year and Fall Estimates

The estimates of the number of Fall and Academic year undergraduate, federal aid recipients by federal aid program are shown in Table 1. The table also contains the estimated mean (or average) award amount for these recipients. Award amount is used as a generic term across programs in place of the more specific terms "grants," "loans," and "earnings." In more detailed tables later in this report, program data estimates are compared to both Fall and Academic year NPSAS estimates for the five programs separately.

The estimates in Table 1 indicate that number of federal aid recipients who were enrolled in the Fall of 1986 accounted for only about 77 percent of the 1986-87 Academic year recipients. Approximately 1 million of the 4.3 million Academic year recipients of federal aid were not enrolled in the Fall.

The percent of Academic year recipients who were enrolled in the Fall varies considerably across the five federal aid programs. Figure 1 depicts these relationships. For the Pell and GSL programs, the Fall recipients account for only 75 percent of the Academic year recipients. For the other three campus-based programs (SEOG, Perkins, and CWS), the

Table 1.-- Estimated award recipients and mean award amounts, Title IV Federal Aid Program,[1] undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year

	Any Federal Aid[4]	Pell	GSL	SEOG	Perkins	CWS
	Number of recipients (in thousands)					
Academic year[2].....	4,322	2,592	2,849	631	645	492
Fall[3].....	3,335	1,965	2,149	561	637	478
	Mean award amount					
Academic year[2].....	$2,644	$1,284	$2,291	$673	$1,055	$955
Fall[3].....	2,750	1,397	2,286	685	1,050	966

NOTE: Details may not add to totals due to rounding.

[1]Title IV Federal Aid Programs include Pell, GSL, SEOG, Perkins and CWS. The SSIG program recipients are excluded for these tabulations.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

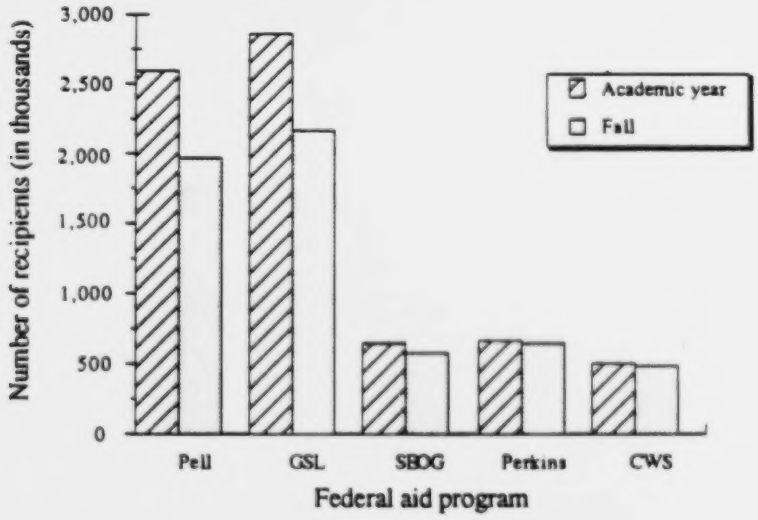
[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

[4]Any Federal Aid recipients are those who were awarded any Pell, GSL, SEOG, Perkins, or CWS funds.

Fall recipients are a much higher percent of the Academic year recipients (89 percent, 99 percent, and 97 percent, respectively).

The estimated mean award amounts in Table 1 do not show the same magnitude of variability as the number of recipients. The mean award amount for all undergraduate, federal aid recipients for the Academic year is about $110 less than the $2,760 mean award amount for the Fall recipients. (Note that for each of the five federal aid programs the mean award amounts are specific for that program. In other words, the estimated $1,290 mean award amount for Academic recipients of Pell grants includes only the award from the Pell program, not the sum of all federal aid for the individuals who have a Pell.) Only Pell recipients have a mean award amount that differs by more than $15 between the Fall and Academic year estimates. The difference in the estimated mean award amount for the Pell recipients is $115.

Figure 1. Number of recipients by Federal aid program.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Table 2 contains estimates of the number and mean award amount for undergraduate, federal aid recipients by type and control of the institution attended. Type and control classifications that are consistent with federal financial aid program classifications are used throughout this report. The 2 year school classification includes schools with less than 2 year offerings.

Figure 2 shows the Academic year and Fall estimates of recipients by institutional type and control. In the public and the private, not-for-profit 4 year schools the Fall recipients are a much greater proportion of the Academic year recipients (96% and 84%). In the public and the private, not-for-profit 2 or less year schools the Fall recipients are a smaller proportion of the Academic year recipients (73% and 62%). In the private, for-profit schools, which are predominantly less than 2 year schools, the Fall recipients account for less than half of the Academic year recipients.

Table 2.-- Estimated award recipients and mean award amounts, Title IV Federal Aid Program,[1] undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control

	Total	Public		Private, not-for-profit		Private, for-profit
		4-year	2-year	4-year	2-year	All
	Number of recipients (in thousands)					
Academic year[2]	4,322	1,416	879	981	107	938
Fall[3]	3,335	1,361	640	821	67	447
	Mean award amount					
Academic year[2]	$2,644	$2,640	$1,718	$3,121	$2,504	$3,035
Fall[3]	2,750	2,698	1,904	3,220	2,681	3,272

NOTE: Details may not add to totals due to rounding.

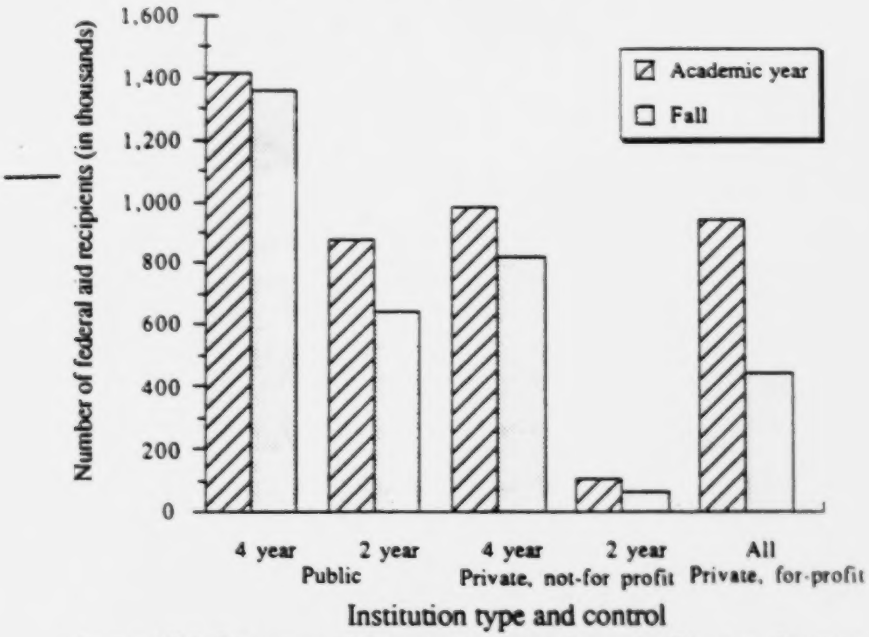
[1]Title IV Federal Aid Programs include Pell, GSL, SEOG, Perkins and CWS. The SSIG program recipients are excluded for these tabulations.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

The estimated mean award amounts in Table 2 for Fall and Academic year recipients are the mean total award per recipient across the five federal aid programs. For the public and the private, not-for-profit 4-year schools the difference in the means is less than $100, for the public and the private, not-for-profit 2-year or less schools the difference in the means is somewhat less than $200, and for the private, for-profit schools the difference is nearly $240. In all five groups of schools, the mean for the Fall recipients is greater than that of the Academic year recipients.

Figure 2. Federal aid recipients by institution type and control.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Comparison of NPSAS Academic Year and Title IV Quality Control Estimates

One of the data voids that the NPSAS fills is the need for a student-based, comprehensive account of the total aid received by postsecondary students. No other national database contains detailed data on the number of students who receive financial assistance and the amount of that assistance. Each of the five federal aid programs being discussed does collect data, but those data do not include participation in other financial aid programs or even other federal aid programs.

As noted in Appendix A, the Academic year weighting procedure depended upon some information that was unknown due to the lack of data about the total number of federal aid recipients. Some assumptions had to be made in order to produce the Academic year weights. One way to examine the reasonableness of the assumptions is to contrast the Academic year estimates to other estimates of joint federal aid program participation. The only data that are available to contrast with the NPSAS Academic year estimates are estimates from a Title IV Quality Control (QC) report on recipients for 1985-86. The data from the QC study were taken from Table B-1 of the Title IV Quality Control Project Contractor Report by Advanced

Technology. It appears in the Stage Two, Final Report, Volume 1, Appendix to the Findings, dated June 1987.

Estimates of the number of recipients of federal aid for both the NPSAS Academic year and the Title IV Quality Control sample by joint program participation status are shown in Table 3. Before contrasting the estimates, some very important factors must be taken into consideration. First, the NPSAS estimates are for recipients in 1986-87 while the QC estimates are for recipients in 1985-86. Important financial aid decisions were made that had an impact on the number of recipients of the five programs between the two years. Second, both sources of estimates are samples and subject to sampling error. Some of the 31 cells of the table are based upon relatively small sample sizes and are likely to have large sampling errors. The QC sample is based upon a sample of only about 2,500 Title IV financial aid recipients. The sampling errors of the QC estimates were not contained in the report with the data. Third, a footnote to the tables from which the QC estimates were taken indicates that the figures were based upon preliminary data. In particular, the footnote suggests that the number of GSL recipients may be off by as much as 10 percent. Fourth, the NPSAS estimates are for undergraduate recipients, while the QC estimates are not restricted to undergraduates.

Despite these caveats, the estimates in Table 3 for NPSAS and the QC samples are very similar. The percent of recipients with a GSL only and the percent of recipients with only a GSL and a Pell grant or only a Pell grant exhibit the greatest degree of disagreement. This finding is suggestive of the hypothesis that reweighting for the NPSAS Academic year estimates may have increased the number of recipients who received only a GSL and Pell grant or who received only a Pell grant at the expense of the number of recipients who received only a GSL. Because of the caveats noted above, especially the one related to the GSL estimate, there is very little evidence to support this hypothesis. The analysis of recipients with Pell grants in the next section also seems at variance with this hypothesis. Statistical tests of the differences could not be performed because sampling errors are not available for the QC estimates.

Another notable difference in the estimates from Table 3 concerns the estimates of recipients of CWS. The difference of the percent (the last column of Table 3) is negative for 14 of the 16 cells for which recipients have a CWS, while this difference is negative for only 1 of the 15 cells for which the recipients do not have a CWS. This result may be due to the way students with a CWS were identified for reweighting and then counted in the tables in this report. The Fall NPSAS students who were awarded a CWS were reweighted regardless of whether or not they had any earnings. The NPSAS CWS estimates in Table 3 and all other tables in this report are of the number of recipients who actually had earnings. The NPSAS estimate of the number of students who were awarded a CWS, but did not have any earnings, is about 170,000. This problem is discussed more completely in the section on the CWS analysis.

In summary, the comparison of the 1986-87 NPSAS Academic year estimates to the 1985-86 QC sample estimates reveals a general pattern of agreement between the two sources. There is mild evidence to suggest that the NPSAS reweighting may have resulted in shifting the estimate of GSL-only recipients into the estimate of GSL -and Pell-only recipients. The estimates in the table do reveal a problem with the estimates of CWS recipients. This problem was identified and will be discussed further in a later section.

In the sections that follow, estimates for each of the five federal aid programs are examined separately. Estimates from the program data files are compared to the NPSAS estimates for Fall and Academic year recipients for each program, except for the GSL program for which there are no comparable program data estimates.

Table 3.-- Estimated award recipients of any Title IV Federal Aid[1], undergraduates enrolled at any time during the 1986-87 Academic year[2] and all recipients estimated from the 1985-86 Title IV Quality Control Sample[3]

Federal aid program					Number of recipients (in thousands)		Percent of recipients		Difference of percent
PELL	SEOG	Perkins	CWS	GSL	1986-87 NPSAS[2]	1985-86 QC sample[3]	1986-87 NPSAS	1985-86 QC sample	NPSAS-QC sample
				√	1,258	1,905	29.1%	37.7%	-8.6%
			√		24	21	0.5	0.4	0.1
			√	√	53	90	1.2	1.8	-0.6
		√			56	35	1.3	0.7	0.6
		√		√	93	66	2.1	1.3	0.8
		√	√		10	19	0.2	0.4	-0.1
		√	√	√	34	52	0.8	1.0	-0.2
	√				32	17	0.7	0.3	0.4
	√			√	50	20	1.2	0.4	0.8
	√		√		6	13	0.1	0.3	-0.1
	√		√	√	13	38	0.3	0.8	-0.5
	√	√			25	23	0.6	0.5	0.1
	√	√		√	44	25	1.0	0.5	0.5
	√	√	√		12	12	0.3	0.2	0.0
	√	√	√	√	21	29	0.5	0.6	-0.1
√					916	968	21.2	19.2	2.0
√				√	907	726	21.0	14.4	6.6
√			√		79	133	1.8	2.6	-0.8
√			√	√	63	98	1.5	1.9	-0.5
√		√			77	82	1.8	1.6	0.2
√		√		√	77	66	1.8	1.3	0.5
√		√	√		22	45	0.5	0.9	-0.4
√		√	√	√	21	48	0.5	0.9	-0.5
√	√				91	96	2.1	1.9	0.2
√	√			√	102	93	2.4	1.8	0.5
√	√		√		51	63	1.2	1.3	-0.1
√	√		√	√	31	56	0.7	1.1	-0.4
√	√	√			50	55	1.2	1.1	0.1
√	√	√		√	51	37	1.2	0.7	0.5
√	√	√	√		23	42	0.5	0.8	-0.3
√	√	√	√	√	29	79	0.7	1.6	-0.9
		Total			4,322	5,055	100%	100%	

NOTE: Details may not add to totals due to rounding.

[1]Title IV Federal Aid Programs include Pell, GSL, SEOG, Perkins and CWS. The SSIG program recipients are excluded for these tabulations.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, Contractor Report by Advanced Technology, Title IV Quality Control Project, Stage Two, Final Report, Volume 1, Appendix to Findings, June 1987, Table B-1. Due to a revision in the estimate of total GSL loan volume, the estimates of the number of students participating will change by as much as 10 percent.

Comparison of Pell Grant Estimates

The NPSAS estimates of the characteristics for postsecondary undergraduate students who received a Pell grant can be compared to the figures reported in "The Pell Grant Program End of Year Report 1986-87 Award Year." This report contains data on the number of recipients of Pell grants by various student and institutional characteristics. Three characteristics that were chosen for analysis are institution type and control, amount of grant, and family income by dependency status.

The NPSAS estimates should be comparable to the End of Year report except NPSAS estimates refer to only those students who attended a school in the 50 States and the District of Columbia. The End of Year Report includes all recipients regardless of where the institution is located. About 167,000 Pell grant recipients attended institutions that were not in the 50 States or the District of Columbia. This accounts for 6 percent of the recipients as reported in the End of Year Report. The program figure that is comparable to the NPSAS Academic year estimate of 2.6 million recipients is 2.5 million recipients rather than the 2.7 million recipients which is shown in the tables.

The recipients who attended institutions outside the 50 States or the District of Columbia accounted for slightly over 7 percent of the total expenditures. The mean grant amount for these recipients is $1,526 which is much higher than the mean grant amount of $1,287 for the recipients that are comparable to those included in the NPSAS estimates. Including these recipients in the figures increases the $1,287 mean grant amount to $1,301, as shown in the End of Year Report.

The difference in coverage must be taken into account in the analysis because the End of Year Report figures contain the recipients who attended institutions outside the 50 States and the District of Columbia and the program data in tables that follow are taken directly from that report. In particular, since the Pell grant program is an entitlement program that is based upon financial need and educational cost, the recipients who are excluded from NPSAS (for geographic reasons) can be expected to have lower incomes or higher educational costs since they have higher mean grant amounts.

The estimated number of recipients and the mean award amount for Pell grant recipients by the type and control of the institution they attended are presented in Table 4. Figure 3 graphically depicts the estimated number of recipients. The program data and the NPSAS Academic year estimates are fairly consistent. Some of the discrepancies may be associated with different classifications of institutions by type and control in the two systems. The Fall estimates differ rather sharply from the other two estimates in the pattern noted earlier, i.e., the Fall recipients in the 2 year or less institutions constitute the smallest proportion of the Academic year's totals. The estimated mean award amounts for the program data and the NPSAS Academic year are also very close, with the greatest difference in the private, not-for-profit 2-year-or -less institutions.

Table 5 and Figure 4 show the estimated number of Pell grant recipients by the amount of grant awarded. Here again the program data and the NPSAS Academic year estimates are very similar. At the higher grant levels ($1,800 and above), the NPSAS Academic year estimates appear to be slight underestimates, but this may be associated with the geographic coverage issue discussed earlier.

Estimated number of Pell grant recipients by dependency status and family income are presented in Table 6. Figure 5 shows the distribution of all Pell grant recipients by

Table 4.-- Estimated award recipients and mean award amounts, Pell Grant program, program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control

	Total	Public		Private, not-for-profit		Private, for-profit
		4-year	2-year	4-year	2-year	All
		Number of recipients (in thousands)				
Program data[1]	2,660	857	685	426	58	633
Academic year[2]	2,592	825	734	375	64	594
Fall[3]	1,965	794	534	314	40	283
		Mean award amount				
Program data[1]	$1,301	$1,378	$1,025	$1,489	$1,389	$1,361
Academic year[2]	1,284	1,386	1,013	1,447	1,286	1,373
Fall[3]	1,397	1,449	1,153	1,489	1,507	1,593

NOTE: Details may not add to totals due to rounding.

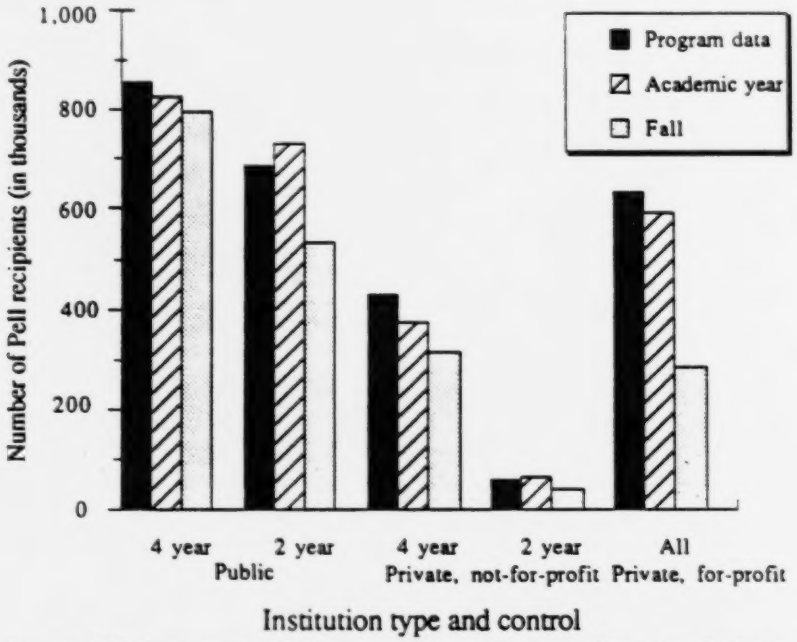
[1]SOURCE: U.S. Department of Education, Office of Postsecondary Education, Office of Student Financial Assistance; The Pell Grant program End of Year Report, 1986-87 Award Year.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

family income. Examination of the figure reveals the difference in the program data and NPSAS estimates by family income. At the lower family income levels the program data reports more recipients, while at the higher levels of family income the NPSAS Academic year estimates of recipients are larger. This difference is not extreme, and it is consistent with the hypothesis noted above about the students that are excluded from NPSAS. Differences between the program and NPSAS estimates are also evident when the dependency status and family income are examined jointly. In particular, the difference between the estimates of independent students at the highest income level is relatively large.

Figure 3. Pell recipients by institution type and control.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

In summary, the NPSAS Academic year estimates of Pell grant recipients are in reasonable agreement with the program data in the End of Year Report for most characteristics examined. This finding is not unexpected because preliminary files were provided by the Pell program staff and these provided a great deal of control in the reweighting process along this dimension.

Table 5.-- Estimated award recipients (in thousands) and mean award amounts, Pell Grant program, program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by grant level

		Grant level							
	Total	$1-299	$300-599	$600-899	$900-1,199	$1,200-1,499	$1,500-1,799	$1,800-2,099	2,100
Program data[1]....	2,660	162	273	353	416	350	320	330	456
Academic year[2]..	2,592	171	294	339	365	368	322	297	437
Fall[3].....	1,965	101	162	206	248	280	300	289	378

NOTE: Details may not add to totals due to rounding.

[1]SOURCE: U.S. Department of Education, Office of Postsecondary Education, Office of Student Financial Assistance; The Pell Grant program End of Year Report, 1986-87 Award Year.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

Table 6.-- Estimated award recipients (in thousands) and mean award amounts, Pell Grant program, program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87Academic year, by dependency status and family income level

	Total	Family income level				
		Under $6,000	$6,001-9000	$9,001-15000	$15,001-20,000	Over 20,000
All recipients						
Program data[1]...	2,660	1,251	411	522	265	212
Academic year[2]..	2,592	865	372	615	367	372
Fall[3].....	1,965	677	280	446	271	291
Dependent recipients						
Program data[1]...	1,227	312	180	312	216	206
Academic year[2]..	1,157	179	122	288	253	315
Fall[3].....	970	153	108	251	207	251
Independent recipients						
Program data[1]...	1,433	938	230	210	49	6
Academic year[2]..	1,435	686	250	327	115	57
Fall[3].....	995	524	172	195	64	40

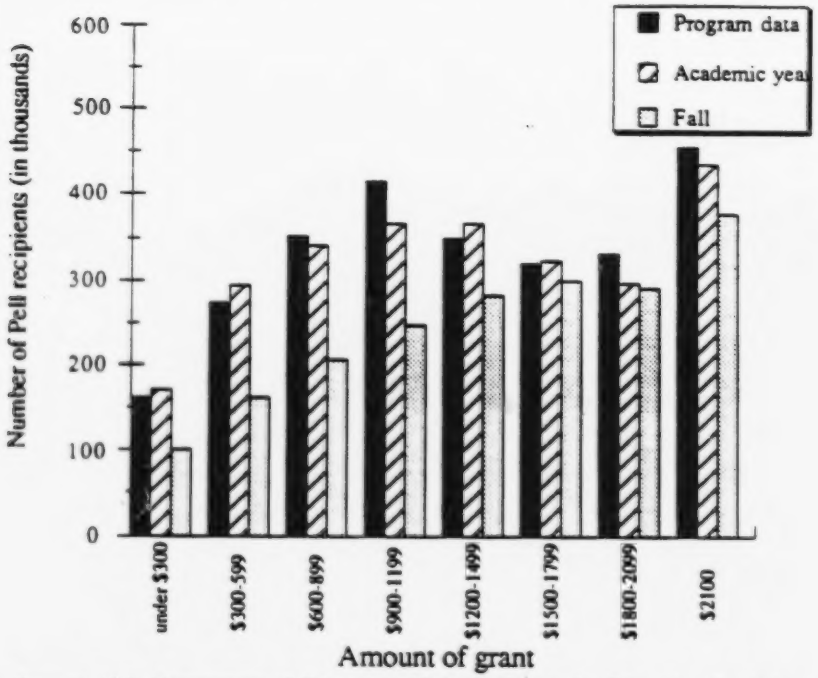
NOTE: Details may not add to totals due to rounding.

[1]SOURCE: U.S. Department of Education, Office of Postsecondary Education, Office of Student Financial Assistance; The Pell Grant program End of Year Report, 1986-87 Award Year.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

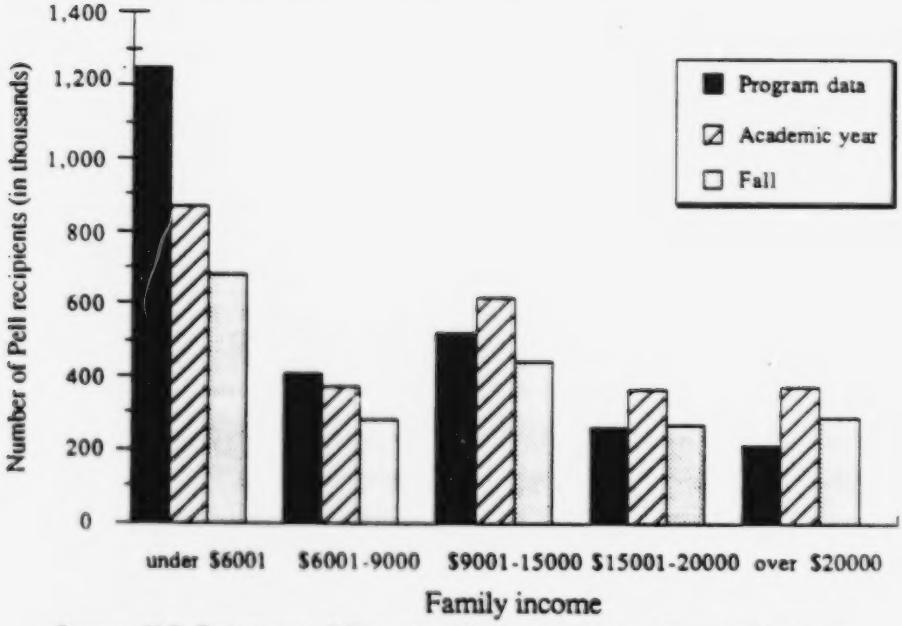
[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

Figure 4. Pell recipients by amount of grant.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Figure 5. Pell recipients by family income.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Comparison of Supplemental Educational Opportunity Grant Program (SEOG) Estimates

Comparison program data for all three of the campus-based programs (SEOG, Perkins, and CWS) were provided in a preliminary report produced by the Analysis Section/Campus ans State Grant Branch/Division of Policy and Program Delevopment in the Office of Student Financial Aid of the U.S. Department of Education, dated June 23, 1988. The program data include all recipients regardless of the location of the postsecondary institution the student attended, as in the case of the Pell program data. The number of recipients who attended institutions which are outside the 50 States or the District of Columbia are not known from the preliminary program data.

Table 7 contains estimates of the number of SEOG recipients by institution type and control and family income. All of the information on SEOG recipients available from the preliminary report is contained in Table 7. Approximately two-thirds of the SEOG recipients attend 4-year institutions. Since the Fall estimates are closer to the Academic year estimates for 4-year institutions, we can expect to find that the Fall estimates for SEOG (and most other campus-based programs) are closer to the program data than they are for the Pell and GSL programs. In fact, the estimated number of recipients is so small for the private, not-for-profit, 2-year-or-less schools and the private, for-profit schools that the comparison is not very meaningful in these categories.

Figure 6 shows the estimated number of dependent recipients by family income. The graph is very descriptive of the difference between the NPSAS estimates and the program data. Dependent recipients with under $12,000 family income are underestimated in NPSAS, while those with a family income of $12,000 or more are slightly overestimated by NPSAS. The distributions of Fall and the Academic year estimates are closer to each other than to the program data for SEOG recipients. This finding contrasts with the finding noted for the Pell grant recipients.

The mean award amount estimates exhibit the same pattern as the number of recipients, i.e., the Fall and Academic year estimates are closer to each other than to the program data. For both the estimated number of recipients and mean award amount, the NPSAS Academic year estimates are marginally closer to the program data than the Fall estimates.

Comparison of Perkins Loan Estimates

The analysis of Perkins loan recipients closely parallels that of the SEOG recipients. Both of the financial aid programs are campus-based, and students in 4-year schools account for the heaviest concentration of the recipients.

Table 8 contains estimates of the number of Perkins loan recipients by institution type and control and family income. Figure 7 shows the estimated number of dependent recipients of Perkins loans by family income. As in the estimates for SEOG recipients, the lowest family income level (under $6,000) is where the biggest discrepancy between the program data and the NPSAS estimates occurs. The difference at the higher income levels, however, is not as pronounced as it is for SEOG recipients.

For both the estimated number of recipients and the mean award amount, the NPSAS Fall estimates and Academic year estimates track each other more closely than they do the program data. The Fall estimates and the Academic year estimates do equally well in estimating the program data.

Table 7.-- Estimated award recipients and mean award amounts, Supplemental Educational Opportunity Grants (SEOG), program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level

		Dependent student family income level						
	Total	Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	Independent status
Total				Number of recipients (in thousands)				
Program data[1]	631	64	69	76	71	55	65	232
Academic year[2]	631	29	56	73	82	63	77	252
Fall[3]	561	30	53	67	73	57	70	211
				Mean award amount				
Program data[1]	$633	$555	$616	$684	$721	$748	$765	$553
Academic year[2]	673	539	663	689	749	728	761	622
Fall[3]	685	548	680	700	753	732	759	640
Public - 4-year				Number of recipients (in thousands)				
Program data[1]	227	22	26	31	29	21	20	76
Academic year[2]	228	13	17	29	37	27	26	80
Fall[3]	214	13	17	29	34	25	24	73
				Mean award amount				
Program data[1]	$637	$575	$614	$638	$665	$675	$680	$630
Academic year[2]	662	512	760	647	695	676	604	669
Fall[3]	665	520	764	639	695	684	606	676
Public - 2-year				Number of recipients (in thousands)				
Program data[1]	114	10	10	9	7	5	3	69
Academic year[2]	114	(*)	(*)	(*)	(*)	(*)	(*)	76
Fall[3]	107	(*)	(*)	(*)	(*)	(*)	(*)	70
				Mean award amount				
Program data[1]	$449	$392	$397	$412	$434	$465	$450	$471
Academic year[2]	513	(*)	(*)	(*)	(*)	(*)	(*)	580
Fall[3]	519	(*)	(*)	(*)	(*)	(*)	(*)	591
Private, not-for-profit - 4-year				Number of recipients (in thousands)				
Program data[1]	191	21	24	27	27	23	36	33
Academic year[2]	192	7	21	25	30	25	43	40
Fall[3]	174	7	20	23	27	23	40	34
				Mean award amount				
Program data[1]	$827	$690	$789	$883	$911	$918	$877	$710
Academic year[2]	870	750	816	973	920	894	894	776
Fall[3]	880	768	831	987	928	896	893	798

Table 7.-- Estimated award recipients and mean award amounts, Supplemental Educational Opportunity Grants (SEOG), program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level --Continued

	Total	Dependent student family income level: Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	Independent status
Private, not-for-profit - 2-year				Number of recipients (in thousands)				
Program data[1]	13	1	1	2	2	1	2	4
Academic year[2]	11	(*)	(*)	(*)	(*)	(*)	(*)	6
Fall[3]	8	(*)	(*)	(*)	(*)	(*)	(*)	3
				Mean award amount				
Program data[1]	$567	$490	$558	$604	$634	$617	$577	$537
Academic year[2]	594	(*)	(*)	(*)	(*)	(*)	(*)	550
Fall[3]	584	(*)	(*)	(*)	(*)	(*)	(*)	536
Private, for-profit				Number of recipients (in thousands)				
Program data[1]	86	10	8	7	5	4	4	49
Academic year[2]	86	(*)	7	7	(*)	9	(*)	50
Fall[3]	58	(*)	6	5	(*)	7	(*)	31
				Mean award amount				
Program data[1]	$445	$386	$405	$467	$503	$525	$523	$443
Academic year[2]	486	(*)	415	541	(*)	480	(*)	495
Fall[3]	496	(*)	457	577	(*)	441	(*)	507

NOTE: Details may not add to totals due to rounding.

[1]SOURCE: Unpublished tabulations from U.S. Department of Education, Analysis Section/Campus and State Grant Branch/Division of Policy and and Program Development, Office of Student Financial Assistance, dated June 22, 1988.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

[4]Less than 30 unweighted cases.

Table 8.-- Estimated award recipients and mean award amounts, Perkins Loans, program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level

		Dependent student family income level						
	Total	Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	Independent status
Total				Number of recipients (in thousands)				
Program data[1]	645	47	56	73	77	69	122	200
Academic year[2]	645	20	45	66	76	84	130	224
Fall[3]	637	23	49	67	74	82	130	212
				Mean award amount				
Program data[1]	$978	$894	$912	$953	$978	$993	$1,002	$1,002
Academic year[2]	1,055	896	1,014	953	1,013	1,059	1,041	1,128
Fall[3]	1,050	903	1,017	941	1,007	1,053	1,038	1,130
Public - 4-year				Number of recipients (in thousands)				
Program data[1]	310	22	28	38	39	32	42	111
Academic year[2]	309	11	22	35	38	39	42	122
Fall[3]	318	12	25	38	38	39	44	123
				Mean award amount				
Program data[1]	$934	$838	$849	$883	$906	$918	$904	$1,016
Academic year[2]	990	810	984	806	927	915	1,021	1,091
Fall[3]	985	816	971	800	926	916	1,010	1,092
Public - 2-year				Number of recipients (in thousands)				
Program data[1]	32	2	2	2	2	2	2	19
Academic year[2]	34	(*)	(*)	(*)	(*)	(*)	(*)	(*)
Fall[3]	28	(*)	(*)	(*)	(*)	(*)	(*)	(*)
				Mean award amount				
Program data[1]	$799	$703	$679	$742	$740	$743	$747	$848
Academic year[2]	1,001	(*)	(*)	(*)	(*)	(*)	(*)	(*)
Fall[3]	1,016	(*)	(*)	(*)	(*)	(*)	(*)	(*)
Private, not-for-profit - 4-year				Number of recipients (in thousands)				
Program data[1]	245	18	22	28	31	31	74	40
Academic year[2]	244	8	19	24	32	34	79	49
Fall[3]	239	8	20	24	31	34	78	45
				Mean award amount				
Program data[1]	$1,054	$962	$1,004	$1,054	$1,076	$1,075	$1,063	$1,052
Academic year[2]	1,101	1,043	1,010	1,101	1,092	1,126	1,068	1,185
Fall[3]	1,101	1,045	1,011	1,103	1,083	1,129	1,066	1,200

Table 8.-- Estimated award recipients and mean award amounts, Perkins Loans, program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level--Continued

	Total	Dependent student family income level						Independent status
		Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	
Private, not-for-profit - 2-year				Number of recipients (in thousands)				
Program data[1]	7	1	1	1	1	1	1	2
Academic year[2]	7	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Fall[3]	6	(4)	(4)	(4)	(4)	(4)	(4)	(4)
				Mean award amount				
Program data[1]	$981	$1,018	$958	$946	$964	$997	$932	$1,043
Academic year[2]	1,078	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Fall[3]	1,076	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Private, for-profit				Number of recipients (in thousands)				
Program data[1]	50	4	4	4	4	3	4	28
Academic year[2]	51	(4)	(4)	(4)	(4)	9	5	23
Fall[3]	46	(4)	(4)	(4)	(4)	8	5	21
				Mean award amount				
Program data[1]	$1,000	$968	$963	$1,023	$1,065	$1,112	$1,068	$977
Academic year[2]	1,261	(4)	(4)	(4)	(4)	1,421	965	1,284
Fall[3]	1,257	(4)	(4)	(4)	(4)	1,407	994	1,259

NOTE: Details may not add to totals due to rounding.

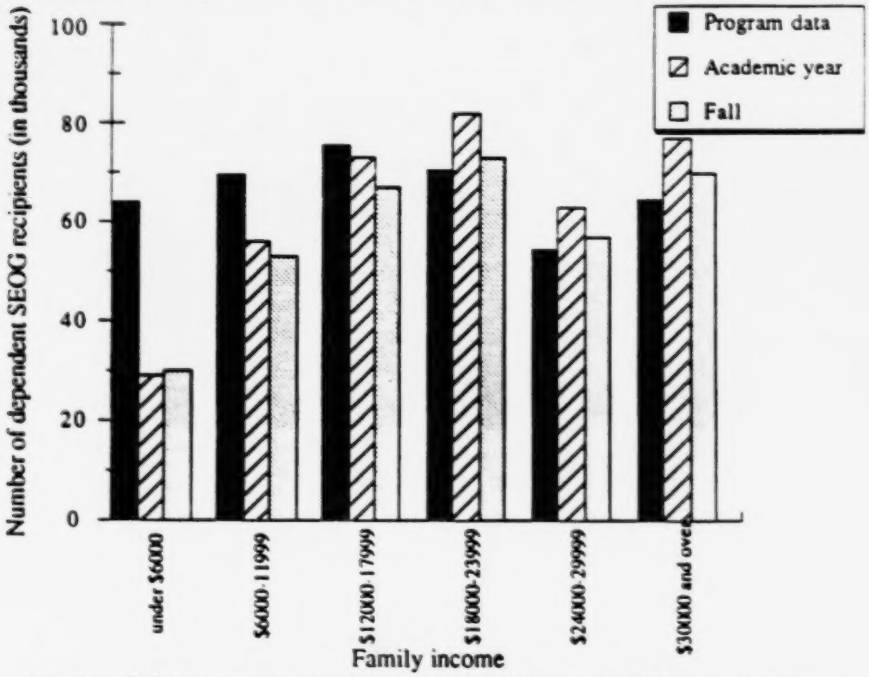
[1]SOURCE: Unpublished tabulations from U.S. Department of Education, Analysis Section/Campus and State Grant Branch/Division of Policy and and Program Development, Office of Student Financial Assistance, dated June 22, 1988.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

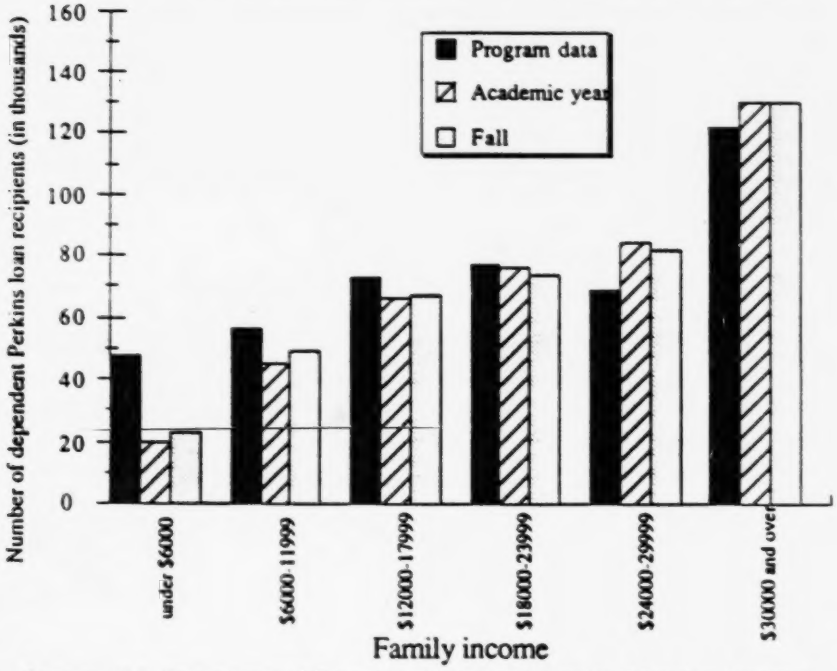
[4]Less than 30 unweighted cases.

Figure 6. Dependent SEOG recipients by family income.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Figure 7. Dependent Perkins loan recipients by family income.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Comparison of Campus Work-Study (CWS) Estimates

The third campus-based program analyzed is the CWS program. This program is different from the other two campus-based programs. In CWS, financial assistance is given by providing recipients with the opportunity to work and earn money while attending school. Students who qualify for the program are awarded an initial amount of money that they can earn under the program. At the end of the year, the final award amount is really the amount of money they have earned in the program.

Data on both the initial award amount and the final award amount were collected in NPSAS, and estimates of both quantities can be produced. In the reweighting process all students who were identified as having qualified for CWS were included. The Academic year estimate of the number of these recipients is 663,000. Of these recipients, only an estimated 492,000 recipients actually earned any money in the program. This difference is a major factor that affects the analysis of the NPSAS estimates and the program data.

There are several explanations for this phenomenon. One possibility is that when NPSAS financial aid data were updated in the summer of 1987, the CWS amount earned data was not fully completed. A methodology report on the updating process should shed some light on this possibility. If this occurred, then it suggests that the initial award amount might be used for recipients with no amount earned.

A second possibility is that the reporting is correct, but the proportion of Academic year recipients of CWS who were enrolled in the Fall is much smaller than it is for the other campus-based programs. If this were true, then the reweighting process was flawed because it should have been based upon the number of recipients who had earnings as opposed to those who had an initial award amount. This hypothesis is not consistent with the fact that over 80 percent of the recipients of CWS are in 4-year schools. These schools are the ones in which the greatest proportion of Academic year recipients are enrolled in the Fall.

A third possibility is that the program data is being used improperly in these comparisons.

The estimates of the number of recipients and mean award amount for CWS recipients by institution type and control and family income are given in Table 9. The problem noted above is very evident in Figure 8, which shows the estimated number of dependent recipients of CWS by family income. The program data counts are much greater than both the Academic year and the Fall estimates of CWS recipients for every category of family income.

The NPSAS estimated mean award amounts are greater than the program estimates for the total and every category of family income. Until evidence is found to support an explanation for this difference, the NPSAS estimates of number of recipients and mean award amount must be regarded as being inconsistent with the program data.

Table 9.-- Estimated award recipients and mean award amounts, Campus Work-Study (CWS-earned), program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level

		Dependent student family income level						
	Total	Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	Independent status
Total				Number of recipients (in thousands)				
Program data[1]	659	70	74	79	76	67	122	171
Academic year[2]	492	20	47	60	54	53	94	165
Fall[3]	478	22	49	60	52	51	95	148
				Mean award amount				
Program data[1]	$873	$798	$830	$857	$859	$846	$814	$988
Academic year[2]	955	1,002	888	882	984	934	884	1,033
Fall[3]	966	1,020	918	881	994	911	886	1,070
Public - 4-year				Number of recipients (in thousands)				
Program data[1]	262	27	31	35	33	27	31	78
Academic year[2]	183	10	20	26	24	19	23	60
Fall[3]	199	11	23	30	25	20	25	64
				Mean award amount				
Program data[1]	$914	$824	$842	$865	$870	$862	$820	$1,071
Academic year[2]	1,013	1,024	937	845	1,086	890	948	1,145
Fall[3]	1,018	1,028	936	852	1,086	894	955	1,160
Public - 2-year				Number of recipients (in thousands)				
Program data[1]	106	13	13	11	8	5	4	52
Academic year[2]	100	(*)	(*)	(*)	(*)	(*)	(*)	70
Fall[3]	80	(*)	(*)	(*)	(*)	(*)	(*)	55
				Mean award amount				
Program data[1]	$870	$797	$809	$818	$832	$810	$758	$934
Academic year[2]	895	(*)	(*)	(*)	(*)	(*)	(*)	881
Fall[3]	968	(*)	(*)	(*)	(*)	(*)	(*)	954
Private, not-for-profit - 4-year				Number of recipients (in thousands)				
Program data[1]	266	26	28	31	33	32	84	32
Academic year[2]	191	5	16	23	24	28	68	28
Fall[3]	187	6	17	22	22	27	66	27
				Mean award amount				
Program data[1]	$843	$778	$830	$867	$860	$844	$819	$925
Academic year[2]	917	972	866	882	965	878	881	1,049
Fall[3]	913	978	867	866	969	889	875	1,035

Table 9.-- Estimated award recipients and mean award amounts, Campus Work-Study (CWS-earned), program counts and NPSAS estimates of undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level --Continued

	Total	Dependent student family income level						
		Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	Independent status
Private, not-for-profit - 2-year				Number of recipients (in thousands)				
Program data[1].....	13	2	2	2	2	1	2	3
Academic year[2].....	9	(*)	(*)	(*)	(*)	(*)	2	(*)
Fall[3].....	8	(*)	(*)	(*)	(*)	(*)	2	(*)
				Mean award amount				
Program data[1].....	$649	$650	$657	$641	$659	$664	$600	$684
Academic year[2].....	517	(*)	(*)	(*)	(*)	(*)	475	(*)
Fall[3].....	516	(*)	(*)	(*)	(*)	(*)	488	(*)
Private, for-profit				Number of recipients (in thousands)				
Program data[1].....	12	2	1	1	1		1	6
Academic year[2].....	9	(*)	(*)	(*)	(*)	(*)	2	(*)
Fall[3].....	8	(*)	(*)	(*)	(*)	(*)	2	(*)
				Mean award amount				
Program data[1].....	$900	$825	$952	$1,038	$1,087	$1,051	$1,167	$842
Academic year[2].....	1,629	(*)	(*)	(*)	(*)	(*)	481	(*)
Fall[3].....	1,892	(*)	(*)	(*)	(*)	(*)	488	(*)

NOTE: Details may not add to totals due to rounding.

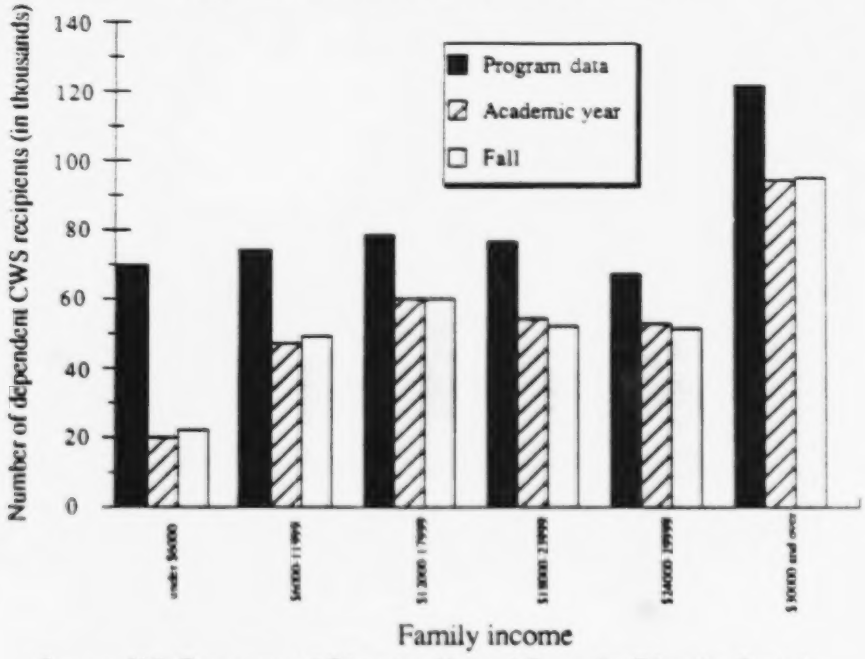
[1]SOURCE: Unpublished tabulations from U.S. Department of Education, Analysis Section/Campus and State Grant Branch/Division of Policy and and Program Development, Office of Student Financial Assistance, dated June 22, 1988.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[3]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

[4]Less than 30 unweighted cases.

Figure 8. Dependent CWS recipients by family income.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

Comparison of Guaranteed Student Loan (GSL) Estimates

The last federal aid program to be examined is the GSL program. The GSL program is not a campus-based program, hence the distribution of recipients by institution type and control is more like that of the Pell program than the other three campus-based programs. The comparison of GSL recipient estimates is severely restricted by the lack of comparable data from the GSL program. NPSAS data is the major source of GSL data on the student level. Most GSL program reports are based upon the number of loans rather than the number of students.

Table 10 contains the estimates of the number of GSL recipients and their mean award amount by institution type and control and family income. No program data are provided in Table 10. Figure 9 shows the number of dependent GSL recipients by family income. The Fall estimates are about 75 to 80 percent of the Academic year estimates for all the income levels of the dependent recipients. For independent recipients, the Fall estimate is only about 67 percent of the Academic year estimate.

The estimates of mean award amount for both the Fall and Academic year are very close to each other across all family income levels and dependency status. Without comparable program data, this analysis is not very useful in assessing the usefulness of the NPSAS Academic year estimates.

Table 10.-- Estimated award recipients and mean award amounts, Guaranteed Student Loans (GSL), undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level

		Dependent student family income level						
	Total	Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	Independent status
Total				Number of recipients (in thousands)				
Academic year[1]...	2,849	100	150	199	222	231	766	1,179
Fall[2].....	2,149	80	126	155	174	186	616	812
				Mean award amount				
Academic year[1]...	$2,291	$2,192	$2,163	$2,239	$2,306	$2,325	$2,202	$2,372
Fall[2].....	2,286	2,184	2,172	2,223	2,291	2,302	2,192	2,392
Public - 4-year				Number of recipients (in thousands)				
Academic year[1]...	887	26	40	68	78	83	258	334
Fall[2].....	848	27	42	69	75	79	244	313
				Mean award amount				
Academic year[1]...	$2,200	$1,894	$2,197	$2,086	$2,214	$2,207	$2,018	$2,382
Fall[2].....	2,197	1,896	2,187	2,081	2,217	2,207	2,017	2,383
Public - 2-year				Number of recipients (in thousands)				
Academic year[1]...	293	(3)	25	(3)	(3)	(3)	36	178
Fall[2].....	218	(3)	19	(3)	(3)	(3)	25	134
				Mean award amount				
Academic year[1]...	$1,997	(3)	$1,794	(3)	(3)	(3)	$1,653	$2,081
Fall[2].....	2,022	(3)	1,821	(3)	(3)	(3)	1,656	2,111
Private, not-for-profit - 4-year				Number of recipients (in thousands)				
Academic year[1]...	782	19	40	52	68	72	348	183
Fall[2].....	651	18	37	45	59	63	286	143
				Mean award amount				
Academic year[1]...	$2,441	$2,517	$2,196	$2,404	$2,377	$2,350	$2,376	$2,679
Fall[2].....	2,438	2,489	2,195	2,407	2,375	2,342	2,369	2,712
Private, not-for-profit - 2-year				Number of recipients (in thousands)				
Academic year[1]...	77	(3)	3	5	7	5	19	36
Fall[2].....	47	(3)	3	4	4	3	12	19
				Mean award amount				
Academic year[1]...	$2,173	(3)	$2,051	$2,213	$2,009	$2,197	$2,222	$2,199
Fall[2].....	2,198	(3)	2,108	2,266	2,046	2,173	2,227	2,231

Table 10.-- Estimated award recipients and mean award amounts, Guaranteed Student Loans (GSL), undergraduates enrolled in Fall 1986 and at any time during the 1986-87 Academic year, by institution type and control and family income level--Continued

	Total	Dependent student family income level						Independent status
		Under 6,000	$6,000-11,999	$12,000-17,999	$18,000-23,999	$24,000-29,999	$30,000- and over	
Private, for-profit				Number of recipients (in thousands)				
Academic year[1]...	809	44	42	64	53	52	105	448
Fall[2].....	385	25	25	31	24	28	49	203
				Mean award amount				
Academic year[1]...	$2,363	$2,311	$2,322	$2,300	$2,464	$2,568	$2,262	$2,370
Fall[2].....	2,383	2,351	2,388	2,307	2,462	2,590	2,292	2,382

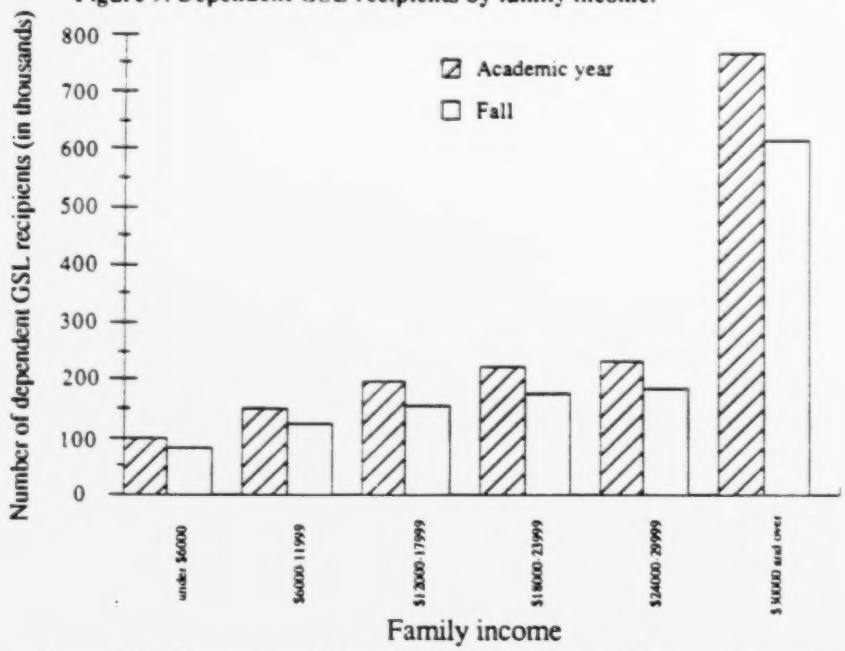
NOTE: Details may not add to totals due to rounding.

[1]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Academic Year Adjusted Weights.

[2]SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study, using Fall Weights.

[3]Less than 30 unweighted cases.

Figure 9. Dependent GSL recipients by family income.



Source: U.S. Department of Education, National Center for Education Statistics, The 1987 National Postsecondary Student Aid Study.

APPENDIX A: WEIGHT ADJUSTMENT METHODOLOGY

Overview of Statistical Method

The procedure used to model or extrapolate from the number of federally aided, postsecondary students measured in the fall of 1986 to the number in the 1986-87 academic year is described below in a step-by-step fashion. Conceptually, the method is to form estimates based upon cross-classifications of the characteristics of the students in the fall NPSAS and then adjust estimation weights so that these students, when re-weighted, are equal to counts of characteristics that are known for the full academic year. The known counts for the academic year from federal aid program data are the marginal counts in the cross-classified tables.

A simple example may help explain the procedure. Suppose that there are two variables for which we know the counts for the full year from federal aid program counts, and each of these variables takes on only two values. Call one of these P (with values yes and no) and the other one G (with values yes and no). From the fall data we can estimate the four cells of the table formed by crossing P and G. This table and the known full year marginal counts are shown below for this hypothetical example.

Hypothetical fall estimates

	G		
P	yes	no	total
yes	20	10	30
no	30	40	70
total	50	50	100

Hypothetical academic year counts

P		G	
yes	40	yes	60
no	90	no	70
total	130	total	130

We wish to make the fall estimates consistent with the academic year known marginal counts. A statistical procedure that can be used to accomplish this task is called "raking," and is implemented by iterative proportional fitting (IPF). This procedure basically "rakes" the fall estimates by the necessary ratio to make one margin for the fall estimate table equal to the academic year known margin, then goes on to do the same for the next margin. The process continues iteratively until the margins from the adjusted estimates table match (converge to) the known margins, if this is possible. The fitted table for the hypothetical table is given below.

Hypothetical fitted values

	G		
P	yes	no	total
yes	25	15	40
no	35	55	90
total	60	70	130

It is clear that the margins for the fitted table match the known margins for this example. The procedure also has other desired statistical properties. In particular, the association between the counts in the initial fall table are retained to the extent possible by the IPF procedure. In the hypothetical example, the cross-product ratio, which is a measure of association in a two-way table, is 2.67 for the initial table of fall estimates and 2.62 in the fitted table.

Given this overview of the statistical procedure used to extrapolate from the fall estimates to the academic year marginal counts, a step-by-step description of the full process is described in the following.

Construction of Sample Estimates

The first step in the process was to produce estimates from the fall data file that could be used as initial values in the IPF procedure. This step involved reducing the file from the 43,176 responding students to the 14,612 responding students with the specified characteristics, imputing values for missing student characteristics needed for the tables, and then producing the tables of estimates.

Responding students meeting both of the following conditions were included in the adjustment process: (1) the level of the student is undergraduate, and (2) the amount reported in the abstract file (based upon the institutions updated reporting) is greater than zero for either Pell, GSL, Perkins, SEOG, or CWS. It should be recognized that students who obtain other types of federal financial aid, such as SSIG, were not included in the reduced file unless they also met both of the above conditions. Furthermore, in a few cases institutions might have been unaware that a student received a GSL. This is probably most often true of students who obtain GSL's. Unless the institution is aware of the financial aid, the student is excluded from this file.

Missing data for the variables age, dependency status, and student aid index (SAI) for Pell students were imputed for the 14,612 file. The imputation was done by using data from the Student Questionnaire whenever possible. When this method did not resolve the missing value, a hot-deck imputation scheme was used.

Weighted estimates of the number of students cross-classified by student characteristics were formed for each of the five major domains. The five major domains are public-four year, public-two year, private-four year, private-two year, and all proprietary institutions. The student characteristics that were used to form the cross-classified estimates varied by domain. For Pell grant recipients the initial cross-classes included the award amount, dependency status, SAI, and age, while for SEOG, Perkins, and CWS only recipient or not were used.

Construction of Marginal Totals

The known marginal totals for the programs had to be constructed based upon preliminary data. These known marginal tables are not the values given in the body of the report. Those counts were not yet available when the reweighting was being done. The preliminary Pell data file for 1986-87 was made available for our use in this project. This preliminary file contained records for over 2.7 million Pell recipients. By restricting our tabulations to the approximately 1 million recipients in the NPSAS sample schools, we were able to reduce the cost of the tabulations and to produce marginal counts consistent with the NPSAS definition of the domain of the institution. We adjusted the counts of the number of recipients estimated from this subset of the preliminary Pell file back to the total number of recipients in the full file after excluding recipients who attended a postsecondary institution outside of the 50 States and the District of Columbia.

Preliminary 1986-87 counts of the numbers of students who were recipients of a SEOG, a Perkins loan, or CWS were obtained from the Campus-based program staff in the Department. No preliminary counts of GSL recipients were available and the number of GSL recipients was not used as a known marginal count.

The biggest obstacle that was encountered in the formation of the known marginal counts was the lack of information about the total number of federally aided students for the academic year. Another way of saying the same thing is that we knew how many students received Pell, SEOG, Perkins, and CWS, but we did not know the number of federally aided students who did not receive a Pell. This number is not known because of cross-program participation. Without this number, we could not use the IPF procedure.

To hurdle this obstacle we made a ***very critical assumption***. We assumed that the proportion of federally aided students who obtained a Pell was constant throughout the academic year. Thus, the estimated proportion of Pell students in the fall is applied to the number of academic year Pell recipients to determine the number of federally aided students for the academic year. In this way, the assumption determines the number of federally aided students for the academic year and plays a major role in determining the number of GSL recipients for the academic year.

There is no empirical evidence that we know exists to either support or deny this assumption. It is clear that the same type of assumption about the Campus-based programs is not valid. Most of the Campus-based program recipients are in school in the fall. Because of the unverified nature of the assumption and the sensitivity of the results to the assumption, judicious use of the results is recommended.

The counts of students that were used as the margins for the academic year time period are titled "Academic Year Counts."

Construction of Weight Adjustment Factors

The final step in the process was to "rake" the initial estimates to the academic year marginal totals and then to form ratios of the estimates in the fitted table to the estimates in the initial fall estimates table. These ratios are then applied to the fall student weights to produce an adjusted student weight that sums to the marginal academic year totals.

The IPF procedure in SAS was used to "rake" the initial estimates to the marginal program totals. The specific marginal constraints (the program academic year counts) that were used in the procedure were modified after reviewing the number of iterations needed for convergence and the ratios of the fitted estimates to the initial estimates. The conclusion of the review was that specific marginal totals involving the number of Pell recipients by age and SAI were causing the larger than desired ratios. The elimination of these constraints produced results that were much more reasonable.

The fitted table counts are virtually identical with the marginal counts since the IPF procedure did converge. The values of the ratio of the fitted estimate to the initial estimate in the cross-classification for each domain are adjustment factors. These are the factors that are used to form the adjusted student weight for the NPSAS student data file. Multiplying the original student weight (the fall student weight) by the appropriate ratio as determined by the cross-classified student characteristic results in the adjusted student weight for the 1986-87 academic year. This adjusted weight is computed and stored on a dataset which can be merged with the NPSAS student file for the specific analyses purposes. Replicate adjusted weights are also on the dataset so that variance estimates can be produced.

Reliability Issues

On a more technical aside, the adjustment of the weights brings with it a price in terms of the reliability of the estimates. The price is an increase in the sampling error of the estimate. The ratios shown in the tables of this appendix indicate that the adjustment should add variability to the weights and, consequently, higher sampling errors. A brief examination of the variability induced by the adjustment suggests that the increase in sampling errors is about 10 percent.

The increase in sampling error is a secondary concern for this process. The greater concern is the bias that is introduced by reweighting. If the federal aid recipients who are enrolled in the fall have different characteristics than the recipients who are not enrolled in the fall, then the estimates will be biased. As noted in the report, some estimates, such as the number of recipients enrolled in the spring but not in the fall, should not even be considered using the adjusted weights because the biases are so large.

Definition of Variables Used in the IPF

V11--Pell Recipients by Award Amount

1--not Pell recipient
2--Dep under $700
3--Dep, $700-1,299
4--Dep, $1,300-1,899
5--Dep, $1,900-2,100
6--Indep, under $1,000
7--Indep, $1,000-1,599
8--Indep, $1,600-2,100

V21--Pell Recipients by Award Amount

1--not Pell recipient
2--Under $1,000
3--$1,000-1,899
4--$1,900-2,100

V22--Pell Recipient by SAI Status

1--not Pell recipient
2--0-299
3--300-799
4--800 or more

V23--Pell Recipient by Dependency

1--not Pell recipient
2--Dependent
3-Independent

V31--Pell Recipients by Award Amount

1--not Pell recipient
2--Dep, under $1,000
3--Dep, $1,000-2,100
4--Indep, under $700
5--Indep, $700-1,299
6--Indep, $1,300-2,100

V41--Pell Recipients by Award Amount

1-- not Pell recipient
2--Under $1,300
3--$1,300-2,100

V43--Pell Recipeints by Dependency Status

1--not Pell recipient
2--Dependent
3--Independent

V51--Pell recipients by Award Amount

1--not Pell recipient
2--Dep, under $1,299
3--Dep, $1,300-2,100
4--Indep, under $999
5--Indep, $1,000-1,599
6--Indep, $1,600-2,100

V4--SEOG Recipients

1--not SEOG recipient
2--SEOG recipient

V5--Perkins Loan Recipients

1--not Perkins recipient
2--Perkins recipient

V6--CWS Recipient

1--not CWS recipient
2--CWS recipient

APPENDIX B: DATA SOURCES AND RELIABILITY

Sampling and Data Collection

NPSAS covers students in all sectors of postsecondary education, such as public, private non-profit, and private for-profit institutions. However, institutions serving only secondary students or institutions providing only avocational, recreational, or remedial courses were not eligible for inclusion in the in-school component of NPSAS. NPSAS data users should note that school and student eligibility criteria for NPSAS may vary from eligibility criteria for other data systems or federal programs. For example, NPSAS includes only students that attended schools in the 50 States and D.C., while many federal aid programs count students that attend schools in Puerto Rico and other areas outside the 50 States. Differences in eligibility criteria must be taken into account when comparing NPSAS estimates to other estimates.

The sampling design for NPSAS involved three stages of sampling, clustering of units at two of the sampling stages, stratification of the sampling units at each stage, and assignment of differential probabilities of selection. The first stage of sampling consisted of selecting 120 geographic areas based upon three-digit zip code area. The purposes of this clustering were to reduce the costs of data collection in the sampled institutions and to ensure the coverage of institutions. In the second stage, a list of eligible postsecondary institutions in each of the sampled PSUs was created and a sample of institutions was selected. Of the 1,163 eligible institutions selected, 1,074 institutions agreed to participate resulting in a weighted institution response rate of 95 percent. Details on the institutional response rates are contained in Appendix Table B-1.

Table B-1. Number of sample institutions in NPSAS, by final classification and response status.

Final classification		Number of institutions				Unweighted	Weighted
Type	Control	Total	Participating	Ineligible	Refusals	response rate	response rate
Doctoral	Public	119	109	5	5	96%	95%
Doctoral	Private,not-for-profit	140 (2)	128 (2)	1	11	92	94
4-year	Public	112 (2)	97 (2)	11	4	96	97
4-year	Private,not-for-profit	137 (4)	119 (1)	8 (1)	10 (2)	92	92
2-year	Public	208 (1)	185 (1)	16	7	96	96
2-year	Private,not-for-profit	74	56	12	6	90	94
2-year	Private, for-profit	95 (1)	78	13 (1)	4	95	97
Less than 2-year	Public	76	56	16	4	93	93
Less than 2-year	Private,not-for-profit	46 (1)	25 (1)	18	3	88	89
Less than 2-year	Private, for-profit	346	221	90	35	86	87
Total		1353 (11)	1074 (7)	190 (2)	89 (2)	92	95

Notes: Ineligible schools include those that are closed, duplicates, or out of scope for NPSAS.
Numbers in ( ) are substitute schools and are excluded from the response rate calculations.

The third stage of sampling was the selection of students within the participating institutions. A sample of approximately 60,000 students was selected from enrollment lists provided by the institutions. Institution, registrar, and financial aid records were collected for all sampled students during the fall of 1986 and early 1987. During the summer of 1987 institution financial aid offices were asked to update all student financial aid information to

reflect full academic year award amounts. In the spring and summer of 1987 all students were surveyed by mail and telephone to obtain additional data, including self-reported educational expenses. The weighted response rate of the NPSAS Student Survey was 71 percent. Details on the response rates of the students are contained in Appendix Table B-2.

Table B-2. Number of sample students in NPSAS, by institution type and control and student response status

Type	Control	Number of students		Questionnaire response rate	Overall student response rate
		Sampled	Responding		
Doctoral	Public	13,231	9,996	76%	72
Doctoral	Private,not-for-profit	13,383	9,612	71	67
4-year	Public	8,372	6,221	75	72
4-year	Private,not-for-profit	8,998	6,844	77	70
2-year	Public	6,505	4,312	66	63
2-year	Private,not-for-profit	2,083	1,523	68	64
2-year	Private, for-profit	2,081	1,479	71	69
Less than 2-year	Public	765	516	68	49
Less than 2-year	Private,not-for-profit	507	315	62	56
Less than 2-year	Private, for-profit	3,961	2,358	61	53
Total		59,886	43,176	71	67

Estimation Weights

Estimation weights were developed in order to provide a mechanism for producing student-level estimates. The weights were constructed in three steps. First, a student base weight was obtained by using the inverse of the probability of selection. The second step was the adjustment of the base weight by a ratio adjustment factor based upon information from the 1986-87 Integrated Postsecondary Education Data System (IPEDS) and the 1985-86 Higher Education General Information Survey (HEGIS). The final student weight was then computed as the product of the student base weight and a Student Survey nonresponse adjustment factor.

The estimation weights produced by this procedure are the standard or unadjusted weights. They are the weights that were used to produce the Fall estimates that appear in this report. The adjusted weights that were used to produce the Academic year estimates were created from these standard weights. The process used to create the adjusted weights is described in Appendix A.

Reliability of Estimates

The estimates in this report are subject to both sampling and nonsampling error. Sampling error arises because a sample of individuals was selected from a population and was used to make inferences about the population. Estimates derived from one sample differ from estimates derived from another sample drawn from the same population in the same way. These differences result from sampling variability.

One measure of sampling error is the coefficient of variation (CV), which is the standard error of an estimate, divided by the estimate. The CV represents the variability of an estimate expressed as a percent of the estimate. This has the effect of standardizing the variation in terms of units and orders of magnitude. Estimated CVs can be used to determine the standard error of an estimate. To calculate the standard error of the estimate, the CV is multiplied by the estimate.

The standard error may be used to establish a confidence interval around the estimate. To establish a 95 percent confidence interval around the estimate, the standard error is multiplied by 1.96 and the resulting value is added and subtracted from the estimate. This procedure produces an interval that for 95 percent of all possible samples contains the population value.

Estimates of the sampling variability of statistics from NPSAS were produced using a method called the jackknife replication method. Jackknife variance estimation involves forming subsamples from the full sample for estimating sampling variances. This method can be used in sample designs in which the population is first stratified and then a sample of PSUs (primary sampling units) is selected. The basic design assumed by the jackknife method is one in which the population of PSUs is grouped into H strata (h = 1,2,...,H), and two PSUs are selected from each stratum. A replicate is formed by randomly deleting one PSU from a single stratum, doubling the weight of the remaining unit in the stratum, and using all units from other strata. This process (i.e., randomly deleting one PSU from a single stratum, doubling the weight of the remaining unit in the stratum, and using all units from other strata) is repeated in turn for each stratum. Thus, if there are H strata, H replicates will be created. Estimates of the statistics of interest are obtained from each of these replicates. The variation of the replicate estimates around their corresponding full sample estimate is used to estimate the sampling variance of the statistic of interest.

For NPSAS, 34 strata were formed for variance computation purposes and consequently 34 replicates were constructed. Each variance computation stratum is composed of a pair of noncertainty PSUs, some pairs of noncertainty institutions of each type/control, and some certainty schools of each type/control in which the students have been split to form pairs. The jackknife replication technique can be implemented with an existing software package that is available on the Department of Education's computer system.

For estimates of totals, a generalized variance model was adopted. Appendix Table B-3 contains the parameters for the generalized variance model. Below the table there is an example of how the generalized variance parameters can be used to approximate the standard errors of estimates.

Table B-3. Estimated parameters for approximating standard errors of undergraduates from NPSAS

Institutional characteristic	Sample size	a	b	DEFT
All	34,882	-0.000011	1427.8	2.05
Public	17,568	-0.000081	1771.5	1.69
Private, not-for-profit	13,355	0.000217	776.2	2.78
Private, for-profit	3,959	0.003648	525.1	3.73
Less than 2-year	3,189	0.008344	667.8	1.79
2-year	7,314	0.000076	1766.1	1.09
Other 4-year	11,501	0.000568	565.5	1.09
Doctoral	12,878	0.000541	335.7	0.85
Doctoral, public	7,231	0.000376	421.3	1.41
Doctoral, private, not-for-profit	5,647	0.003448	219.1	1.94
Other 4-year, public	5,509	0.001277	405.8	1.70
Other 4-year, private, not-for-profit	5,992	0.000594	606.6	2.21
2-year, public	4,312	0.000020	2009.0	1.33
2-year, private, not-for-profit	1,523	0.020734	345.8	3.12
2-year, private, for-profit	1,479	0.015871	170.3	1.47
Less than 2-year, public	516	0.090499	576.6	1.60
Less than 2-year, private, not-for-profit	315	0.131697	46.9	1.98
Less than 2-year, private, for-profit	2,358	0.005819	678.8	1.60

Example B-1. Standard error of an estimated total

The estimated number of postsecondary undergraduates who obtained federal aid in the Fall semester is 3,335,000. Using the coefficients a and b from the row labeled "All" in Table B-3, viz., -0.000011 and 1427.8, respectively, we can estimate the standard error of this total, which is denoted X in the formula below, as

$$\text{Standard error} = \sqrt{aX^2 + bX}$$

$$= \sqrt{-0.000011(3{,}335{,}000)^2 + 1427.8(3{,}335{,}000)}$$

$$= 68{,}000.$$

The 95 percent confidence interval associated with this estimate is found by adding and subtracting twice the standard error from the estimate. In this case the 95 percent confidence interval is from 3.2 million to 3.5 million recipients.

For estimates of mean award amount, generalized variances are not available. Therefore, standard errors had to be calculated using the jackknife procedure. Some selected

standard errors were computed for mean award amounts. These selected standard errors are given in Appendix Table B-4.

Table B-4. Estimated selected standard errors for mean award amount for undergraduate recipients of federal aid

	Any Federal Aid	Pell	GSL	SEOG	Perkins	CWS
Institution type and control						
All	$30	$15	$20	$20	$20	$25
Public, 4-year	35	20	30	25	25	60
Public, 2-year	65	25	45	35	65	85
Private, not-for-profit, 4-year	45	15	45	35	30	25
Private, not-for-profit, 2-year	70	35	45	55	95	70
Private, for-profit	70	40	25	30	90	780
Dependent's family income						
Under $6,000	---	---	50	35	50	70
$6,000-11,999	---	---	40	45	35	65
$12,000-17,999	---	---	35	35	45	40
$18,000-23,999	---	---	35	25	35	40
$24,000-29,999	---	---	30	40	35	40
$30,000 and over	---	---	25	30	30	30
Independent	---	---	25	25	35	65

The other sources of error in the estimates are generically called nonsampling errors. Nonsampling errors can come from a variety of sources. For example, nonsampling errors can be attributed to incomplete coverage of the population by the sample, failure to respond completely and accurately to the items on the questionnaires, definitional differences, data collection and processing mistakes, and errors made in estimating values for missing data items.

The frame used for sampling for the NPSAS included virtually all the institutions which were a part of the Higher Education General Information Survey, plus lists built from other sources for the less traditional schools. The coverage of NPSAS, in terms of institutions, can be evaluated more formally when the new frame of all postsecondary schools from the Integrated Postsecondary Education Data Systems is available. This frame will also be useful for evaluating the coverage of students within the sampled institutions.

The primary variables used to classify students in the tables of this report are the type and control of the institution the student attended, the student's dependency status, and the family income (the sum of the adjusted gross income and the untaxed income). Experimentation with a preliminary Pell grant data file revealed that the NPSAS definition of type and control differed from that on the Pell file for some students. Rough indications are that the differences could cause up to about 5 percent of the students to be classified into different type and control institutions for reporting purposes under the two definitions.

The other two classification variables, dependency status and family income, had missing values for some students in the NPSAS data collection. Of the 14,612 sample

NPSAS students included in the tabulations, about 6,000 were missing a reported dependency status. Almost all of these students with missing values (5,881 of the 6,004) had reported other information that could be used to derive dependency status. The dependency status for the remaining 123 students was imputed using the value reported by another student with similar characteristics. This method of imputation is called the hot deck method.

Family income was missing for 1,773 of the 14,612 students on the NPSAS data file. The vast majority of the students with missing values for either the adjusted gross income item or the untaxed income item were imputed by the hot deck method for at least one of the two items. The adjusted gross income item, which is the dominant factor in the summation, was completed in 13,870 questionnaires and was derived from the responses of parents of the students for an additional 252 students. Only 490 hot deck imputations were involved for this item.

Award amounts per student that are legitimate for some of the federal aid programs are known. Editing rules were set up in NPSAS to detect award amounts that exceeded $2,100 for Pell, $2,000 for SEOG, $8,000 for GSL, and $10,000 for CWS. Any award amounts in excess of these limits were set to the limit, e.g., $2,100 for Pell. There were 75 cases (45 of which were Pell award amounts) in which the award amount was trimmed to the limit for the students in this report.